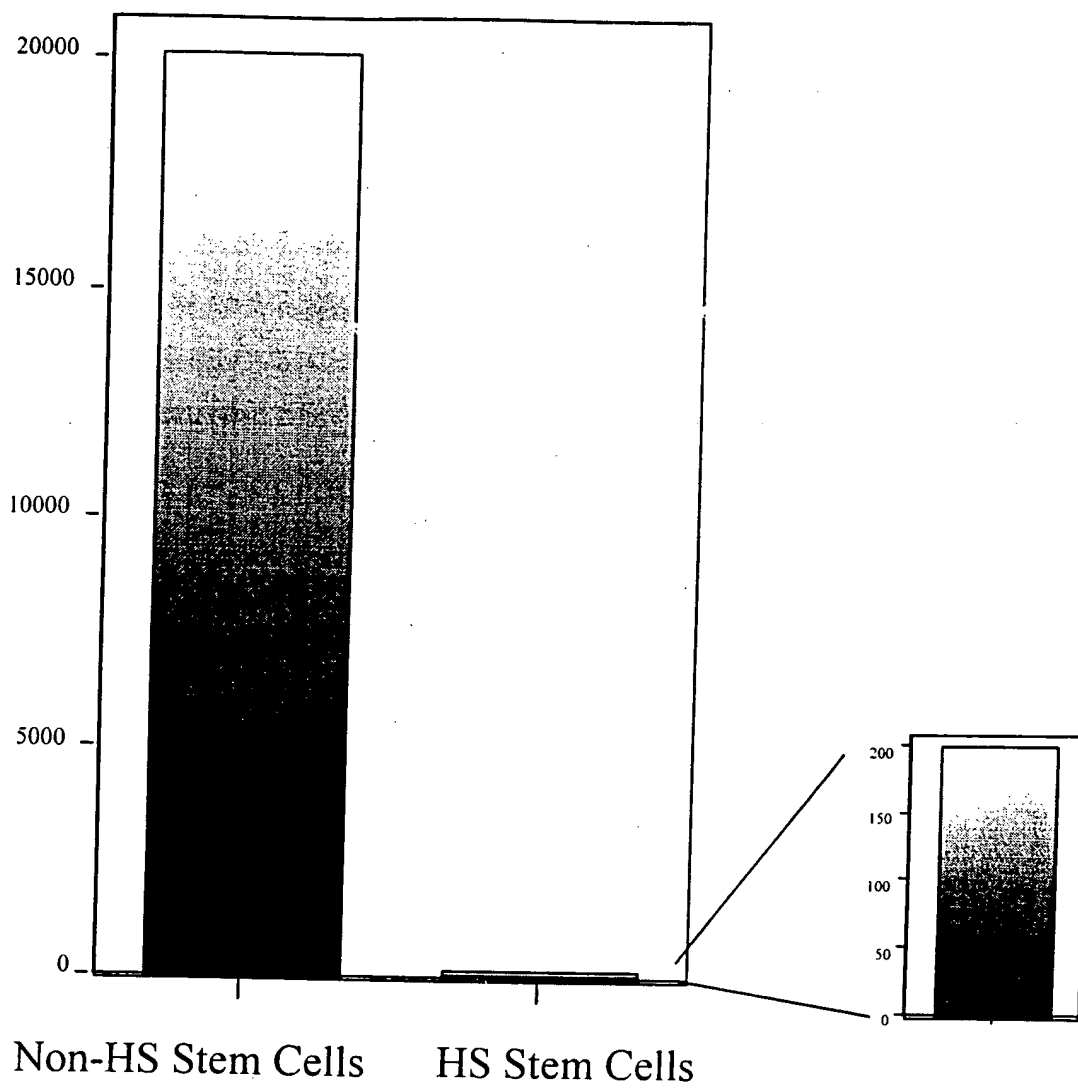
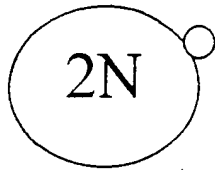


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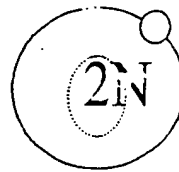
**Figure 1**

Post-meiosis I homozygous  
2N diploid oocyte



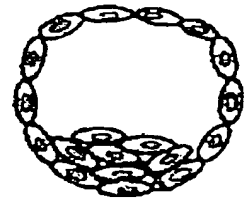
Activation + prevention of  
2nd polar body extrusion

One diploid pronucleus



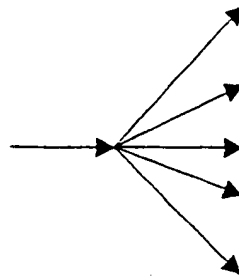
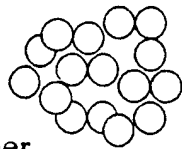
Culture

Blastocyst-like mass



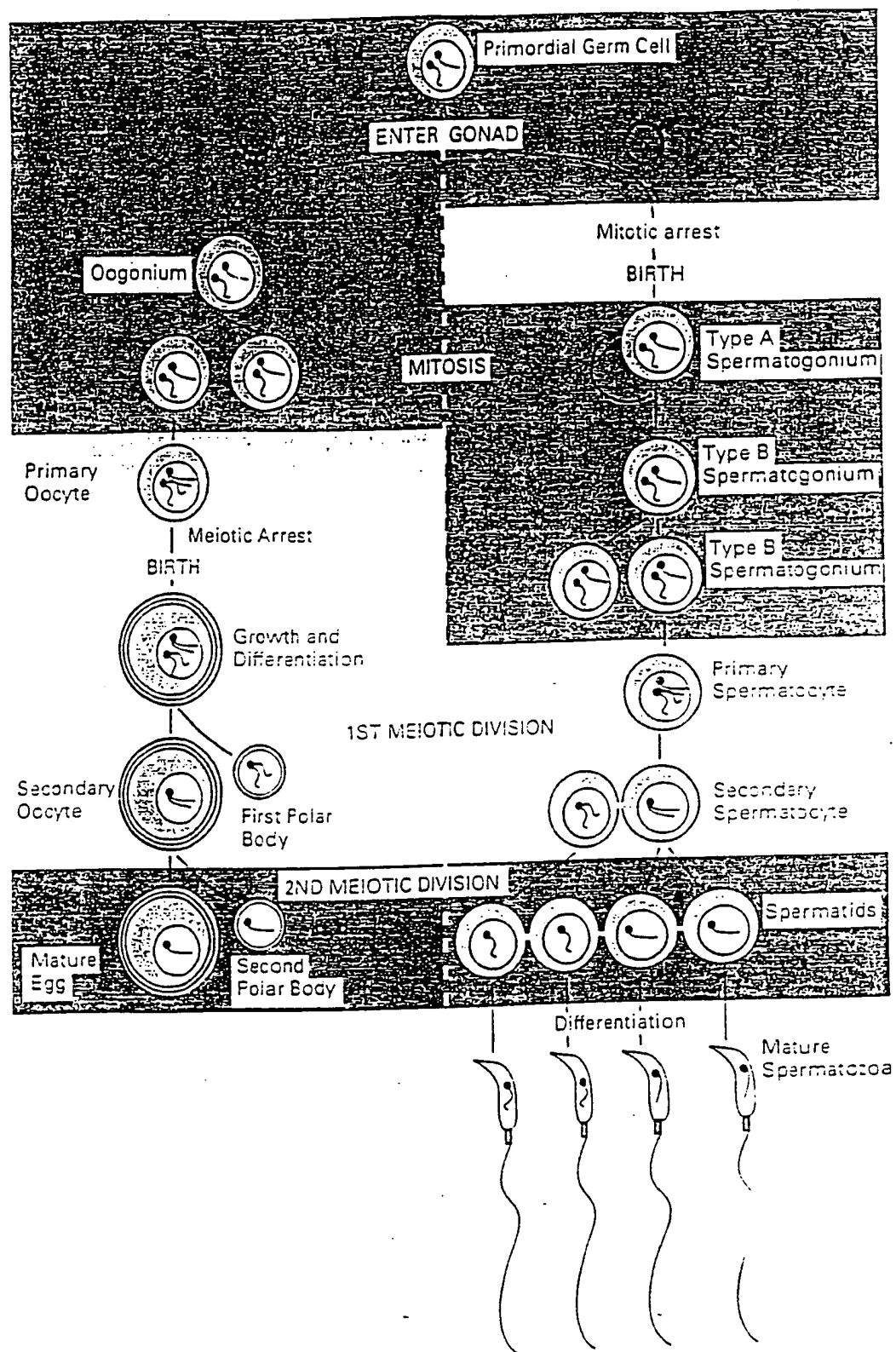
Pluripotent stem cell line

Isolate inner  
cell mass



Differentiated Tissues

Figure 2



**Figure 3**

20200503001

# Serological Specificities of the HLA-A, -B, and -C Loci

A locus	B locus		C locus
A1 <sup>a</sup>	B5	B50(21) <sup>a</sup>	Cw1 <sup>a</sup>
A2 <sup>a</sup>	B7 <sup>a</sup>	B51(5) <sup>a</sup>	Cw2 <sup>a</sup>
A203	B703	B5102	Cw3 <sup>a</sup>
A210	B8 <sup>a</sup>	B5103	Cw4 <sup>a</sup>
A3 <sup>a</sup>	B12	B52(5) <sup>a</sup>	Cw5 <sup>a</sup>
A9	B13 <sup>a</sup>	B53 <sup>a</sup>	Cw6 <sup>a</sup>
A10	B14 <sup>a</sup>	B54(22)	Cw7 <sup>a</sup>
A11 <sup>a</sup>	B15	B55(22) <sup>a</sup>	Cw8 <sup>a</sup>
A19	B16	B56(22) <sup>a</sup>	Cw9(w3)
A23(9) <sup>a</sup>	B17	B57(17) <sup>a</sup>	Cw10(w3)
A24(9) <sup>a</sup>	B18 <sup>a</sup>	B58(17) <sup>a</sup>	
A2405	B21	B59	
A25(10) <sup>a</sup>	B22	B60(40) <sup>a</sup>	
A26(10) <sup>a</sup>	B27 <sup>a</sup>	B61(40) <sup>a</sup>	
A28	B35 <sup>a</sup>	B62(15) <sup>a</sup>	
A29(19) <sup>a</sup>	B37 <sup>a</sup>	B63(15) <sup>a</sup>	
A30(19) <sup>a</sup>	B38(16) <sup>a</sup>	B64(14) <sup>a</sup>	
A31(19) <sup>a</sup>	B39(16) <sup>a</sup>	B65(14) <sup>a</sup>	
A32(19) <sup>a</sup>	B3901(16)	B67	
A33(19) <sup>a</sup>	B3902(16)	B70 <sup>a</sup>	
A34(10) <sup>a</sup>	B40	B71(70) <sup>a</sup>	
A36	B4005	B72(70) <sup>a</sup>	
A43	B41 <sup>a</sup>	B73	
A66	B42 <sup>a</sup>	B75(15)	
A68(25) <sup>a</sup>	B44(12) <sup>a</sup>	B76(15)	
A69(25) <sup>a</sup>	B45(12) <sup>a</sup>	B77(15)	
A74(19)	B46	B7801	
	B47 <sup>a</sup>	Bw4 <sup>a</sup>	
	B48	Bw6 <sup>a</sup>	
	B49(21) <sup>a</sup>		

<sup>a</sup> Serological specificities to be included in a screening panel.

Figure 4A

Officially Recognized HLA-DR and HLA-DQ  
Specificities 1992<sup>3</sup>

DR1	DQ1
DR103	DQ2
DR2	DQ3
DR3	DQ4
DR4	DQ5(1)
DR5	DQ6(1)
DR6	DQ7(3)
DR7	DQ8(3)
DR8	
DR9	
DR10	
DR11(5)	
DR12(5)	
DR13(6)	
DR14(6)	
DR1403	
DR1404	
DR15(2)	
DR16(2)	
DR17(3)	
DR18(3)	
DR51	
DR52	
DR53	

(N) = the broad HLA-DR or HLA-DQ specificity

**Figure 4B**

Restriction Endonucleases for Genotyping of DQA1, DQB1, DRB1, DRB3,  
DRB5, DPA1, and DPB1 Alleles

Allele	Antigen	Restriction endonucleases
DQA1		<i>Apa</i> LI, <i>Hph</i> I, <i>Bsa</i> II, <i>Fok</i> I, <i>Mbo</i> II, <i>Mnu</i> II
DQB1	DQw1	<i>Fok</i> I, <i>Apa</i> I, <i>Hae</i> II, <i>Sfa</i> NI, <i>Bss</i> HII, <i>Hph</i> I
	DQw2,3,4	<i>Fok</i> I, <i>Bgl</i> II, <i>Sac</i> I, <i>Acy</i> I, <i>Hpa</i> II
DRB1	DR1	<i>Ava</i> II, <i>Pst</i> I
	DR2	<i>Fok</i> I, <i>Cfr</i> 13I, <i>Hph</i> I
	DR3,5,6,8	<i>Ava</i> II, <i>Fok</i> I, <i>Kpn</i> I, <i>Hae</i> II, <i>Cfr</i> 13I, <i>Sfa</i> NI, <i>Sac</i> II, <i>Bsa</i> II, <i>Apa</i> I, <i>Hph</i> I, <i>Rsa</i> I
	DR4	<i>Sac</i> II, <i>Ava</i> II, <i>Hin</i> II, <i>Hae</i> II, <i>Hph</i> I, <i>Mnu</i> II
DRB3		<i>Hin</i> II, <i>Kpn</i> I, <i>Hph</i> I
DRB5		<i>Sfa</i> NI, <i>Cfr</i> 13I
DPA1		<i>Aha</i> I, <i>Acy</i> I, <i>Mbo</i> II
DPB1		<i>Bsp</i> 1286I, <i>Fok</i> I, <i>Dde</i> I, <i>Bsa</i> II, <i>Bss</i> HII, <i>Cfr</i> 13I, <i>Rsa</i> I, <i>Eco</i> NI, <i>Ava</i> II

Figure 5

202010"5642E00T

## SSO Probes for HLA-DR Generic Typing

	seq 5' - 3'	AA	specificity
L11	TTCAAACCTTAAGCTGCCAC	9-14	DR1
D11	CTCATACTTAICCTGCTGC	9-14	DR2
N77	TCTGCAGTAGTTGTCCACC	75-80	DR3
H33	CTCTTGGTGATAGAAGTATC	29-35	DR4
E58	CCAGTACTCCTCATCAGGC	56-61	DR11
L37	AGCGCAGGACCTCCTCCTG	34-39	DR12
G11	CTTATACTTACCCTGCCAC	9-14	DR7
L74	GTGTCCACCAGGGCCCGCC	71-77	DR5 (+1403)
Y26	CTGTCCAGATACCGCACCC	23-29	DR9
V11	CTCAAACCTTAACCTCCTCC	9-14	DR10
E71	GGCCCGCTCGTCTTCCAGC	68-73	DR13 (1301, 1302, 1304) DR1 (0103) DR4 (0402, 0414) DR11 (1102, 03) DR13-HAG (1303) DR14 (1401, 04, 07) DR3 DR13 (1301, 02, 04, 06) DR14 (1402, 03, 06)
K71	CGGCCCCGCTTGTCTTCCAG	68-73	DR2 (DRB5*0101)
H60	CTTCCAGTGCTCCGCAGCA	57-62	DR2 (DRB5*02)
N37	AGCGCACGTTCTCCTCCTG	34-39	DR1 (0102) DR12
R37	GAAGCGCAAGTCCTCCTCT	34-40	
AV86	GCTCTCCACAGCCCCGTAG	83-88	

## SSO Probes for the Analysis of DRB1, DRB3, DRB5 Subtypes

	Oligo seq 5' - 3'	AA	Specificity
G13	ACACTCACCCGTAGAGTAC	9-14	0801-0805, 1105, 1201, 1202, 1404
H30-2	ATAGAAAGTGTCTGTCCAGC	27-32	1505
N37	AGCGCACGTTCTCCTCCTG	34-39	0301, 402, 1301, 1302, 1305, 1306, 1402, 1403, 1406
S37	AGCGCACGGACTCCTCTTG	34-39	0406
S57	GCCTAGCGCCGAGTACTG	56-61	0405, 0409-0412, 0801, 0803, 0805, 1303, 1304
H60	GTTCCAGTGCTCCGCAGCA	57-62	1401, 1404, 1407
F67	CTTCCAGGAAGTCCTTCTG	64-69	1601, 1101, 1103-1105, 1202, 1305
I67	CTTCCAGGATGTCTTCTG	64-69	0803, 1102, 1201, 1301-1304, 1306, 0412
I67-2	ACATCCTGGAAGACGAGC	66-71	0103, 0402, 0414, 1102, 1301, 1302, 1304
E71	GGCCCGCTCGTCTTCCAGG	68-73	0103, 0402, 0414, 1102, 1103, 1301, 1302, 1304
K71	CGGCCCCGCTTGTCTTCCAG	68-73	1303
QK71	CGGCCCCGCTTGTCTCGAC	68-73	0401, 0409, 0413
QR71	CGCGCGCCCGCCTCTGCTC	69-74	0404, 0405, 0408, 0410-0411
QR71-2	CGCCCCGCCTCTGTCCAG	68-73	0101, 0102, 0403-0408, 0410, 0411, 1402, 1403
R71	GGCCCCGCTGTCTTCCAGG	68-73	1101, 1104, 1105, 1305, 0801-0805, 1403, 0412
R71-2	CGCGCGCGCGCCTGTCTTC	69-74	1601, 1602, DRB5*0101, 0102
RR71	AGCCGAGGCGGGCCGAGG	69-74	1401, 1404, 1405, 1407 (DRB*0101)
E74	GTGTCCACCTCGGCCCCGCC	71-77	0403, 0406, 0407, 0411, 1401, 1404, 1405, 1407
L74	GTGTCCACCAGGGCCCGCC	71-77	0801-0805, 1403, 0412
V86	AACACGGGGTTGTGGAG	82-87	Val86
G86	AACACGGGGTTGGTGAG	82-87	Gly86
AV86	GCTCTCCACAGCCCCGTAG	83-88	0102, 1201, 1202 DRB5*02

Figure 6

Figure 7

Locus	5' Primer sequence	3' Primer sequence
D6S276	5-tenatcaaatcaatccccagag	5-cttctttgcagactgtcacc
D6S105	5-gggattacaggcaggagccac	5-gaaggagaattgtaatccg
MOGCA	5-gaaalgagaaftaagggaga	5-gataaagggggaactactaca
D6S265	5-agtcacccctactgtgtctatc	5-atcgaaggtaaacacagcagaag
MIB	5-gcttcacccgatacgttagaagac	5-gcatgggtgtcagagatagtcaggc
D6S273	5-ggaggaagttaggtattctgc	5-accnaacttcaaatlttcgg
DQCARI	5-gcactataatcaattgctttccacagtac	5-gattcataaggccaagaatccagcatattgg
DQCAR	5-gaaacatataataacagagacagacaaa	5-catttcttcttatacttccata
G51152	5-ggtaaaattctgactgtgccc	5-gacagcctcttcttaacctgc
TAPICA	5-gctttgatctccccctc	5-ggacnaatlttgcctctggagg
RING3CA	5-gcttataggggagactaccg	5-gaggtaatgtcacaggatgggg
D6S291	5-ggcatcagggcactgccc	5-ggggagagacgaattattactaact



Figure 8

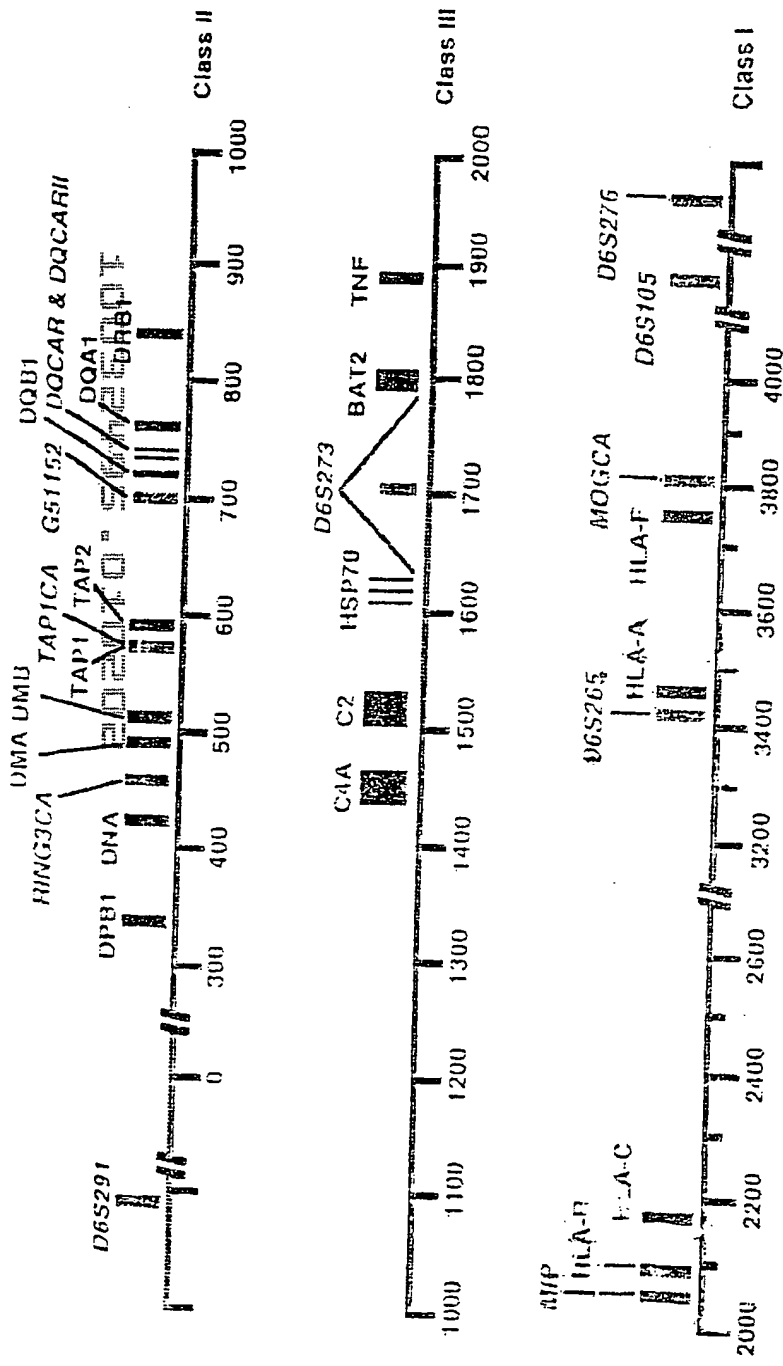


Figure 9A.



Figure 9B.

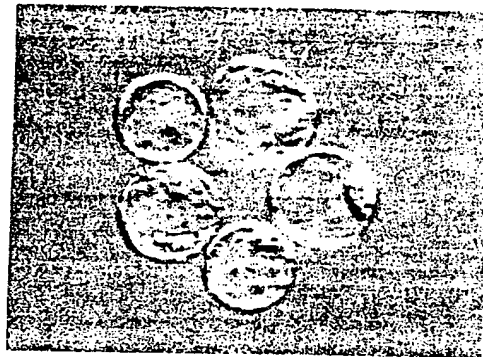


Figure 9C.



Figure 9D.



Figure 9E.

1 2 3



Figure 9F.

1 2 3



10032495.010202

Figure 10A

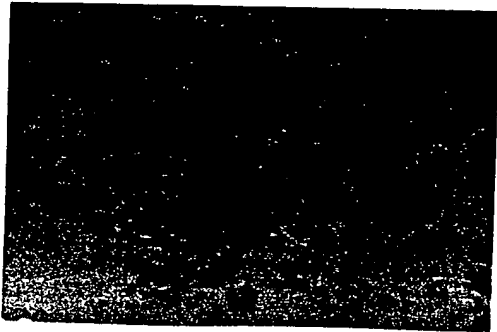


Figure 10B

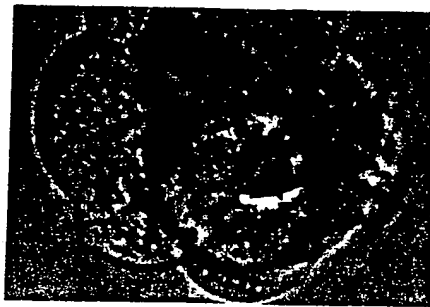
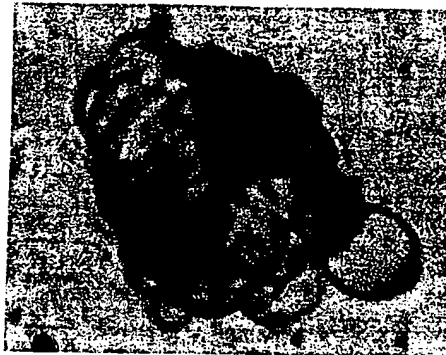


Figure 10C



Figure 10D



202010562E001

PCR Primers for Amplification of the DQA1, DQB1, DRB1, DRB3, DRB5, DPA1, and DPB1 Genes

Gene	Primers	Sequences (5' to 3')	Den.	Ann.	Ext.
DQA1	5'Primer GH26	GTGCTGCAGGTGTAACTTGTACCAG	94°C	62°C	72°C
	3'Primer GH27	CACGGATCCGGTAGCAGCGGTAGAGTTG			
DQB1	5'Primer GH28NL	GCATGTGCTACTTCACCAACG	94°C	55°C	72°C
	3'Primer QB202	CACCTGCAGATCCCGCGGTACGCCACCTC			
	5'Primer GH28NL	GCATGTGCTACTTCACCAACG	94°C	55°C	72°C
	3'Primer QB204	CACCTGCAGTCCGGAGCTCCAACTGCTA			
DRB1	5'Primer 5'R2	TTCTGTGGCAGCCTAAGAGG	94°C	60°C	72°C
	5'Primer 5'R4	GTTTCTTGGAGCAGGTTAAAC	94°C	60°C	72°C
	5'Primer 5'R9-1	GAAGCAGGATAAGTTTGAGTG	94°C	55°C	72°C
	5'Primer 5'R1	GGTGTCTGGAAGATGCACT	94°C	55°C	72°C
	5'Primer 5'R7	AGTTCCTGGAAGACTCTTCT	94°C	60°C	72°C
	5'Primer 5'R10	GGTGTCTGGAAGACGCGTCC	94°C	60°C	72°C
	5'Primer 5'R3568	ACGTTTCTTGAGTACTCTACG	94°C	60°C	72°C
	3'R (common for DRB1)	CCGCTGCACTGTGAAGCTCT			
DRB3	5'Primer DRBAMP-52	CCCAGCACGTTTCTTGGAGCT	94°C	60°C	72°C
	3'Primer	CCGCTGCACTGTGAAGCTCT			
DRB5	5'Primer 5'DRB5	CTTGACAGCAGGATAAGTAT	94°C	60°C	72°C
	3'Primer	CCGCTGCACTGTGAAGCTCT			
DPA1	5'Primer PL	GGAAGCTTGATCCCCCTGAGGTGACCG	92°C	58°C	72°C
	3'Primer PR	GGGGATCCCCAGTCTTGAGGAGCGCG			
	5'Primer PLTM	GGAAGCTTGAGGCCCAAGAGCCAATCCA	(161 bp)		
	3'Primer PRTM	GGGGATCCGCCAGAACGCAGAGACTT			
DPB1	5'Primer DPB101N	GTGAAGCTTTCCTCCGACAGAGATTAT	94°C	62°C	72°C
	3'Primer D1E2U1	CACCTGCACTCACTCACCTCGGCGCTG			

Note: Den.: Denature, Ann.: annealing, Ext.: extension.

Figure 11